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(74) Agents: KIRK, Martin et al.; UCB, S.A., Allée de la Recherche, 60, B-1070 Brussels (BE).

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(71) Applicant (*for all designated States except US*): UCB, S.A.
[BE/BE]; Allée de la Recherche, 60, B-1070 Brussels (BE).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): SIMAL, François [BE/BE]; avenue Alexandre Bertrand, 11, B-1190 Forest (BE). TWEEDY, Harrell [US/US]; Fairwood Drive, Acworth, GA 30101 (US). VAN ES, Steven [BE/BE]; Avenue Brugmann, 288, B-1180 Uccle (BE). ROOSE, Patrice [BE/BE]; Brabantsebaan, 4, B-1600 St. Pieter Leeuw (BE).

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(54) Title: ADHESIVES

(57) Abstract: There are disclosed star shaped thermoplastic elastomers made of acrylic block copolymers obtained by transition metal catalysed radical polymerisation. The elastomers comprise core arms obtained from monomers or mixture of monomers, whose T_g is from about -65°C to about -20°C, and of shell arms obtained from monomers or mixture of monomers, whose T_g is from about 70°C to about 160°C. The core copolymer has a polydispersity of 2 or higher and the final copolymer has a polydispersity of from 3 to 10.

INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C08F293/00 C09J153/00 C08L53/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08F C08L C09J C09D C08G C08K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 2003/013790 A1 (HUSEMANN ET AL) 16 January 2003 (2003-01-16) * page 2 para. 30 ; page 2, para. 22-27 ; page 3, para. 37 - page 4, para. 73 * -----	1-10
X	US 5 399 620 A (NIESSNER NORBERT ET AL) 21 March 1995 (1995-03-21) * column 2, line 45-52 ; column 1, line 57-68 ; column 2, line 57 - column 3, line 1 ; abstract ; column 2, line 31-40 * -----	1-10
X	EP 0 243 120 A (DU PONT) 28 October 1987 (1987-10-28) * page 7, line 25-30 ; page 5, line 15-35 ; page 12, line 1-8 ; claim 1 * ----- -/-	1-10

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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- "E" earlier document but published on or after the international filing date
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search

28 April 2004

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Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Hammond, A

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International Application No
PCT/EP 03/14658

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/43344 A (RIME FRANCOIS ; CIBA SC HOLDING AG (CH); MUEHLEBACH ANDREAS (CH)) 27 July 2000 (2000-07-27) * examples 5, 6 ; page 7, line 1 - page 8, line 6 ; page 12, line 3 - page 13, line 5 ; claims 1-15 * -----	1-10
X	US 6 310 175 B1 (YOSHIDA MASATOSHI ET AL) 30 October 2001 (2001-10-30) * claim 1 ; column 1, line 5-10 ; column 5, line 55-59 ; column 6, line 25-39, 15-24 ; examples and tables ; claims 2-10 ; column 5, line 16-25 ; abstract * -----	1-10
X	US 6 288 173 B1 (BARKAC KAREN A ET AL) 11 September 2001 (2001-09-11) * column 11, line 53-56 ; column 6, line 16 "ethyl acrylate" ; column 6, line 12-26 ; column 4, line 38-43 ; column 8, line 62-65 * -----	1-10
X	WO 86/00626 A (DU PONT) 30 January 1986 (1986-01-30) * abstract ; page 14, line 33 - page 16, line 29 ; claims 1-11 ; page 5, line 11 - page 14, line 30 ; example 23 * -----	1-10
X	WO 92/07014 A (DU PONT) 30 April 1992 (1992-04-30) claims 21, 26, 28-30, 34 ; page 23, line 5-20 ; page 18, line 1-5 ; page 19, line 31 - page 20, line 32 ; page 35, line 17-29 * -----	1-10
X	US 2002/115798 A1 (NARAYAN-SARATHY ET AL) 22 August 2002 (2002-08-22) * abstract ; claims 6,5,1-21 ; page 1, para.14 ; page 2, para.18 * -----	1,3,4, 6-10
X	US 5 756 585 A (FAYT ROGER ET AL) 26 May 1998 (1998-05-26) * abstract ; claims 1-29 * -----	1-10
A	WO 00/39233 A (HAESE FRANCOIS C D ; MA JINGJING (US); EVERAERTS ALBERT I (US); MINNES) 6 July 2000 (2000-07-06) * page 5, line 28 ; page 11, line 6-11 * -----	1-10
A	US 6 162 882 A (MATYJASZEWSKI KRZYSZTOF ET AL) 19 December 2000 (2000-12-19) * abstract ; column 1, line 25-35 ; column 7, line 51 - column 9, line 38 * -----	1-10
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International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 763 548 A (MATYJASZEWSKI KRZYSZTOF ET AL) 9 June 1998 (1998-06-09) * abstract ; column 6, line 30 ; column 14, line 1-30 * -----	1-10

INTERNATIONAL SEARCH REPORT

International application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1 - 10

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

A branched polymer product comprising an acrylic copolymer comprising one or more core arm(s) comprising one or more core polymer(s) and one or more shell arm(s) comprising one or more shell polymer(s) as detailed in the application claim 1.

The present claim 1 is a product-by-process claim and thus the product has been treated according to Guidelines, C, III, 4.7b for "product-by-process".

2. claims: 11-19

A method for producing a branched polymer comprising the process steps (a) - (e) as described in claim 11.

3. claims: 20-23

An adhesive composition comprising a branched copolymer as claimed in any of the claims 1-10.

4. claim: 24

A composition comprising 2 or more incompatible acrylic polymers together with a compatibilising agent as described in claim 24.

5. claim: 25

The use of a polymer as claimed in any of the claims 1-10 as a compatibilising agent for 2 or more incompatible acrylic polymers.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP 03/14658

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